at the same time suggesting reasons for this fact more or less similar to those advanced by Prof. Sayce; but the discoverer is by no means convinced that Dr. Smith is right at all. Since penning my article in the *Graphic* I have received a letter from Mr. Davis, giving his reasons for his sturdy belief, in the same terms as one received by Prof. Sayce, who communicates its gist to the *Times* as follows:—"Immediately after the opening of the tomb he had the mummy examined by Dr. Pollock, of Luxor, 'and a prominent American obstetrician. . . . In the presence of the doctor and surgeon, Mr. Ayrton, and one or two other persons, the mummy was opened and the bones exposed. In fact, the mummy had absorbed so much moisture that it could not be unwrapped, but it yielded to the touch and disintegrated to such an extent that there was no difficulty in exposing the bones from end to end. The pelvis was admitted to be the criterion of the sex. Both doctor and surgeon instantly agreed that it was the pelvis of a woman. The surgeon made a most thorough examination, and explained to us why it was a woman's pelvis, and what the difference is between the pelvis of a man and a woman. He practically stated that the 'greater breadth of the pelvic arch gives one of the most easily appreciable points of contrast between the male and female pelvis; the pelvic arch in the female forms an angle of from 90° to 100°, while in the male it averages from 70° to 75°.'" To me Mr. Davis writes:—"In any event, I shall exhaust the question of the sex of the pelvis before conceding Dr. Smith's opinion."

If, however, Dr. Elliot Smith is really right, and the body is that of a man, the fact does not in any way affect the discovery. The tomb, catafalque, coffin, canopic jars, diadem, &c., are those of Tii, and the bones found were in some way substituted for hers. They cannot be those of Akhenaten, as he must have been a middle-aged man when he died.

H. R. HALL.

Use of the Word "Telephotography."

NATURE of August 29 contained an article by Dr. Shelford Bidwell entitled "Practical Telephotography." May I enter a protest against the use of the word "telephotography" to describe the method of transmitting pictures to a distance? Without wishing to go into the merit of the term, I would point out that it has been applied for years to photography by means of a lens consisting of a negative as well as a positive element, as in the well-known "telephoto" lens of Dallmeyer. There is already an extensive literature in which the term "telephotography" is used with this meaning, and to employ it now to describe something totally different can only ultimately result in confusion. Would it not be better to employ the term customarily employed, viz. "phototelegraphy"?

R. CHILD BAYLEY.

20 Tudor Street, London, September 7.

I BELIEVE that the word "telephotography" was coined by myself, and first appeared at the head of an article published in NATURE on February 10, 1881, in which an account was given of the earliest attempt to transmit photographic pictures by electrical means. The term was at the time generally adopted by the Press, and has found its way into several books of reference. In the "Century Dictionary" (1900) telephotography is defined as "the art (not yet attained) of producing a photograph, distant and invisible from the camera, by means of electrical connections with a suitable apparatus near the object." No other meaning is given.

The word was not employed in the sense in which it appears to be now current among photographers until at least ten years later, the date of Mr. Dallmeyer's invention being 1891; but I have no great affection for my neologism, and propose in future to write "telegraphic photography," thus avoiding the possibility of confusion. "Phototelegraphy" I take to mean signalling by flashes of light, as in heliography.

SHELFORD BIDWELL.

Beechmead, Oatlands Chase, Weybridge,
September 13.

DOUBLE STARS.[1]

PROF. BURNHAM tells us in the preface to the first mentioned of these works that when he was attracted to the subject of double stars he had to draw the main part of his information from an early edition of Webb's "Celestial Objects." A useful book, no doubt, and one which has given many an amateur his first insight into a fascinating study, but its modest dimensions compared with those of the ponderous tomes the titles of which appear at the foot of this column may serve to remind us of the progress that has been made since that book occupied a prominent place as a recognised authority. It is in no small measure due to the difficulties arising from this scantiness of information that Prof. Burnham experienced in his early days that we owe this magnificent compilation. In those far-away times it was necessary to collect the history of double stars, to make manuscript copies of all the catalogues that could be obtained, to note carefully all that was published; and though this necessity may no longer exist, these manuscript catalogues have been kept posted up to date, and it is the final and complete outcome of this long-continued work that has now found its way into the printers' hands. We therefore get the results of accumulated experience in the form that the author has found most useful.

The catalogue gives the approximate coordinates of 13,665 stars, the position angle and distance at a given epoch, the magnitude of the components, and such other information as can be pressed into a single line. The value of such a work consists in its completeness. It may be confidently assumed that some information concerning every star recognised as double within the area under review previous to 1906, will be found here. All who have worked with incomplete or disconnected catalogues will know how to appreciate the usefulness of this compilation. In no department of astronomical research is the literature more scattered. Amateurs have contributed much to double-star measurement, and their observations are necessarily distributed through many channels. To collect and make available these many sources of information is a task of no common difficulty, and is perhaps only possible to one who has narrowly watched the growth of the material and sifted the details as the observations appeared. Alertness, industry and a keen interest in the subject were as necessary as access to publications or orderly method of arrangement. No one was better equipped for the task than Prof. Burnham, and we may be grateful that he has accomplished it.

The notes to the catalogue will be of greater interest to those who are concerned in the attainment of astronomical results than is the catalogue itself. Here are recorded a sufficient number of measures to show the motion where there has been any relative change, and so far as possible its character and amount, or to exhibit the unchanged relation of the components where no motion has been detected. References to the original places of publication, which would be used in subsequent calculations, are given for each star. The author gratefully acknowledges that he has been given a free hand in the selection of observations and comments, and he adds that he "has omitted nothing that in his judgment would be worth giving." Here the author assumes the position of a critic, a position for which he is admirably fitted by his long training and close study. Many will be prepared to surrender their judgment

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[1] "A General Catalogue of Double Stars within 121° of the North Pole." By S. W. Burnham. Pp. lv+256. (Washington, D.C.: Published by the Carnegie Institution, 1906.)

"A General Catalogue of Double Stars." Part ii. Notes to the Catalogue. Pp. viii+257–1086. (Published by the Carnegie Institution, 1906.)

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and accept his ruling. All will be cautious how they dissent from his expressed opinions. But it seems to us that to recommend the wholesale rejection of a large number of published measures of double stars is a drastic proposal, from which a less stern critic than the author might well recoil. It may be admitted that the possessors of small telescopes have always struggled to measure objects for which their instruments were unfitted. Indeed, a double-star observer never seems happy unless he is trying to measure something he can see very imperfectly. But simple dissatisfaction with the manner in which an observation has been made does not offer any adequate criterion for the rejection of doubtful observations, and we can hardly accept the assertion "that there need be no difficulty or hesitation in deciding as to the proper material to be used." This, as it stands, is a hard saying, and we may very well doubt if we have correctly understood the author.

He is on safer ground when he declines to deduce any inferences which might be based on the grouping of statistics. He is at present content to collect facts and to regard as premature any attempt to establish, or even suggest, theories on the limited information at command. The remark is made that very little has been done in the way of finding close pairs below the ninth magnitude, and that the effect of recent discovery in this direction may controvert the conclusions drawn from the older measures. This may doubtless be true, but the lack of sufficient data has seldom prevented the adoption of a working hypothesis. Certainly when Prof. Burnham sums up what has been accomplished in a century of double-star observing the results seem somewhat meagre for theory building, and emphasise the necessity for that careful and systematic measurement upon which he insists. There are only eighty-eight systems for which orbits have been found, and of this number only thirty-four can be regarded as of any value. As to the remaining fifty-four systems, the periods and "all the elements of the orbits are wholly uncertain and worthless. They cannot be regarded even as approximations . . . and in some instances it is not certain that they are physical systems at all." This severe criticism can be justified. Perhaps some of these indecisive results and the eagerness to build upon unsuitable observations may be traced to the influence of Herschel, and the apparent success that attended his ingenious device for deriving an approximate orbit. More rigorous methods have, however, given results of scarcely greater trustworthiness, and the tendency now is to leave double-star orbits severely alone.

It may be of greater practical utility to note that our knowledge of double stars has suffered from the want of organisation among observers. As the author puts it, "Since the observations of Struve the work of micrometrical measurement of double stars has not been wisely distributed. A vast amount of time has been practically wasted in the duplication of measures of the prominent and familiar pairs and in observing objects which need no attention except at long intervals." But Prof. Burnham may here be reminded that it is not enough to suggest that the working lists of double stars should be more carefully selected. What is wanted is authoritative leadership and sympathetic guidance. Such an influential position the writer of these books might worthily occupy. His competency no one would question. The necessity for cooperation among astronomers and the judicious husbanding of resources is becoming more and more recognised. The beneficial effect of organisation in coping with large masses of work is acknowledged. Isolated and unmethodical labour is accompanied by many evils, but none more noticeable than that of overlapping and needless duplication. These evils cannot be entirely avoided, but they can be reduced to a minimum.

Overlapping may to some extent be beneficial. An example is supplied by the very admirable work which Mr. Lewis has lately published through the Royal Astronomical Society. But it is not often that two experts work on so nearly parallel lines. Mr. Lewis has done in a very thorough and masterly manner for the Struve stars what Prof. Burnham has accomplished for a larger number. Mr. Lewis's work may be the more efficient, in the sense that it enables us to dispense with a larger number of original authorities, but there would have been no great difficulty and some advantage in combining the merits of both compilations. It is not necessary to give illustrations of the way in which observations are duplicated. It is difficult to quote instances in which independent lines of investigation are being pursued. The Lick Observatory has made the search for close double stars of feeble magnitude peculiarly its own. In this department is doubtless found an admirable employment for large optical power. Mr. Burnham has added many new doubles to our catalogue, but apparently finds a sufficient field for his energy in the re-measurement of recognised doubles. Throughout the United States a vast number of observers are interested in double stars, but in their work it is impossible to recognise any well-developed plan. On this side of the Atlantic, besides the excellent work that is being done at the Royal Observatory, which again demands large aperture, we have an army of amateurs, headed, we may say, by Mr. Maw, the late president of the Royal Astronomical Society, whose contributions to the general store would be increased in value if designed to form part of a definite scheme. Too often double-star measurement is the refuge of the leisured amateur, who finds in this kind of work an agreeable occupation. Such irresponsible observers stand particularly in need of direction, and if some scheme of cooperation could be formulated, Prof. Burnham's intimate acquaintance with the subject would be of immense assistance. He has admirably arranged the material that is to be observed; he has made us apprehend the extent of the field of labour and the abundance of the harvest; he has shown what can be done by unwearying industry and painstaking perseverance; let him complete his work by organising the labourers and infusing into their work system and continuity.

FOOD INSPECTION AND ADULTERATION.

SIR JAMES CRICHTON BROWNE, as president of the Association of Sanitary Inspectors, delivered last week the customary address at the annual meeting of the association. His remarks, devoted largely to the question of purity in foodstuffs, were a forcible presentation of matters which, well known to those concerned in the problem of food-control, deserve the serious attention of a wider circle, since as consumers and as citizens all are interested in the points brought forward.

The most important topic dealt with was that of a pure milk supply. It is "the primary and paramount food question." There is no need to enter here into details of adulteration, but it may be stated that according to the Local Government Board reports ten per cent. of our milk is either adulterated with water or impoverished by the abstraction of fat, or both; whilst a much larger proportion is so manipulated as to leave it only just within the official limits taken as criteria of genuineness. Moreover, the practice of sophistication appears to be extending.

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